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***** STN Columbus *****

FILE 'HOME' ENTERED AT 14:42:32 ON 12 MAY 2004

=> index biosci
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
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ENTRY
0.21
TOTAL
SESSION
0.21

INDEX 'ADISCTI, ADISINSIGHT, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS,
BIOCOMMERCE, BIOSIS, BIOTECHDS, BIOTECHNO, CABA, CANCERLIT,
CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPU, DISSABS, DDFB, DDFU,
DGENE, DRUGB, DRUGMONOG2, ...' ENTERED AT 14:42:47 ON 12 MAY 2004

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Enter SET DETAIL ON to see search term postings or to view
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=> s thymosin (w) beta

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48 FILES HAVE ONE OR MORE ANSWERS, 69 FILES SEARCHED IN STNINDEX

11 QUE THYMOSIN (W) BETA

=> log h
COST IN U.S. DOLLARS
FULL ESTIMATED COST

SINCE FILE
ENTRY
1.14
TOTAL
SESSION
1.35

SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 14:44:02 ON 12 MAY 2004

***** RECONNECTED TO STN INTERNATIONAL *****

SESSION RESUMED IN STNINDEX
INDEX 'ADISCTI, ADISINSIGHT, AGRICOLA, ANABSTR, AQUASCI, BIOBUSINESS,
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CEABA-VTB, CEN, CIN, CONFSCI, CROPU, DISSABS, DDFB, DDFU, DGENE, DRUGB,
DRUGMONOG2, IMSDRUGNEWS, DRUGU, IMSRESEARCH, EMBAL, EMBASE, ESBIOBASE, FEDRIP,
FOMAD, FOREGE, FROSTI, FSTA, GENBANK, HEALSAFE, IFIPAT, IMSPRODUCT, JICST-EPLUS,
KOSMET, LIFESCI, MEDICOF, MEDLINE, NIOSHTIC, NTIS, NUTRACEUT, OCEAN, PASCAL,
PCTGEN, PHAR, PHARMAML, PHIC, PHIN, PROMT, RDISCLOSURE, SCISEARCH, SYNTHLINE,
TOXENTER, USFATFULL, USPAT2, VETB, VETU, WPIDS, WPIDV, WPINDEX'
AT 14:44:53 ON 12 MAY 2004
CHARGED TO COST*

COST IN U.S. DOLLARS
FULL ESTIMATED COST

SINCE FILE
ENTRY
1.14
TOTAL
SESSION
1.35

=> file biosis
COST IN U.S. DOLLARS

SINCE FILE
ENTRY
1.14
TOTAL
SESSION
1.35

FULL ESTIMATED COST

FILE 'BIOSIS' ENTERED AT 14:45:03 ON 12 MAY 2004
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNS) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 6 May 2004 (20040506/ED)

FILE RELOADED: 19 October 2003.

=> s thymosin (w) beta (w) 4
2132 THYMOSIN
635358 BETA
1885726 4

L2 381 THYMOSIN (W) BETA (W) 4

=> d l2 kwic 1-5

L2 ANSWER 1 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***thymosin*** **beta*** **4*** stimulates laminin-5
production independent of TGF-beta. ****4*** (Tbeta4) stimulates
AB ***thymosin*** **beta*** **4*** epithelial cell migration and promotes laminin-5 (LM-5) expression. Using
gene expression analysis with human corneal epithelial cells treated.

IT . . . Parts, Structures, & Systems of Organisms
IT corneal epithelial cells: sensory system
IT Chemicals & Biochemicals
laminin-5: expression, production, synthesis; ***thymosin***
beta* **4*** ; transforming growth factor-beta
RN 77642-24-1 (***thymosin*** **beta*** **4***)

L2 ANSWER 2 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB . . . platelets and/or MKs, such as P-selectin, platelet factor 4 and its
variants, the glycoproteins of the Ib-IX-V and IIb-IIIa complexes,
thymosin **beta*** **4*** , neurogranin, and clusterin
were the most abundant transcripts, confirming the adequacy of our
experiment procedures and the validity of the . . .
GEN. . . Ib-IX-V gene (Hominidae): expression, regulation; human neurogranin
gene (Hominidae): expression, regulation; human platelet factor 4 gene
(Hominidae): expression, regulation; human ***thymosin*** **beta***
****4*** gene (Hominidae): expression, regulation

L2 ANSWER 3 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . c-Fos; c-Jun; green fluorescent protein; mRNA [messenger RNA];
mitogen-activated protein kinase [EC 2.7.1.37]; plasminogen activator
inhibitor 1: extracellular expression, synthesis; ***thymosin***
beta* - ***4***

RN 142243-02-5 (mitogen-activated protein kinase)
9026-43-1 (mitogen-activated protein kinase)
142243-02-5 (EC 2.7.1.37)
9026-43-1 (EC 2.7.1.37)
140208-23-7 (plasminogen activator inhibitor 1)
77642-24-1 (***thymosin*** **beta*** - ***4***)

L2 ANSWER 4 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . Molecular Genetics (Biochemistry and Molecular Biophysics);
Reproductive System (Reproduction)
IT Diseases

uterine adenomyosis: reproductive system disease/female

IT Chemicals & Biochemicals ***thymosin*** **beta*** **4*** : gene expression
RN 77642-24-1 (***thymosin*** **beta*** **4***)

L2 ANSWER 5 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . follicle stem cells: integumentary system, activation; keratinocytes:
integumentary system

IT Chemicals & Biochemicals
matrix metalloproteinase 2 [EC 3.4.24.24]: production, secretion;
thymosin - **beta*** - ****4*** : expression
RN 146480-35-5 (matrix metalloproteinase 2)
146480-35-5 (EC 3.4.24.24)
77642-24-1 (***thymosin*** - **beta*** - ***4***)

=> d l2 kwic 45-55

L2 ANSWER 45 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . macrophage colony stimulating factor [M-CSF]; osteopontin: regulation;
protease; receptor activator of nuclear factor-kappa B ligand [RANKL];
thioredoxin binding protein: regulation; ***thymosin***
beta* - ***4*** : regulation; total RNA

L2 ANSWER 46 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***thymosin*** **beta*** **4*** promotes corneal wound
healing and decreases inflammation in vivo following alkali injury.

AB Previously, ***thymosin*** **beta*** **4*** (Tbeta4) was
found to promote wound healing in full thickness skin wounds and heptanol
debrided corneas. Here, the effect of . . .

IT . . . macrophage inflammatory protein-1-alpha: chemokine, regulation;
macrophage inflammatory protein-1-beta: chemokine, regulation;
macrophage inflammatory protein-2: chemokine, regulation; monocyte
chemoattractant protein-1: chemokine, regulation; ***thymosin***
beta* **4*** : ophthalmic-drug, pharmacodynamics, topical
administration

L2 ANSWER 47 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . Organisms
blood platelets: blood and lymphatics; thrombocytes: blood and
lymphatics

IT Chemicals & Biochemicals
actin; collagen; factor XIIIa [transglutaminase]; fibrin;
thymosin **beta*** - ***4***

L2 ANSWER 48 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
IT . . . Parts, Structures, & Systems of Organisms
cytoskeleton, organization; malignant fibrosarcoma cell, metastases,
motility

IT Chemicals & Biochemicals
F-actin; G-actin; ***thymosin*** - **beta*** - ***4*** : upregulation
thymosin - **beta*** - ***4*** : upregulation

GEN mouse ***thymosin*** - ***beta*** - ***4*** gene (Muridae)

L2 ANSWER 49 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT Major Concepts

IT Biochemistry and Molecular Biophysics; Methods and Techniques

IT Chemicals & Biochemicals

DNase I; F-actin; G-actin; actin- ***thymosin*** ***beta*** -

**** complex; cross-linked; gelsolin; gelsolin-2-actin complex;

phalloidin; ***thymosin*** ***beta*** - ***4***

IT Methods & Equipment

Intas gel scanner; Intas laboratory equipment; Philips 420 microscope;

Philips laboratory equipment; actin-***thymosin*** ***beta*** -

**** complex purification; actin-***thymosin*** ***beta*** -

**** complex purification; Extraction, Isolation, Purification

and Separation Techniques, purification method; difference map analysis;

Molecular Biology Techniques and Chemical Characterization, evaluation.

L2 ANSWER 50 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT of Organisms

IT tumor cells, pathological structure

IT Diseases

Cancer: neoplastic disease

Neoplasms (MeSH)

Chemicals & Biochemicals

RhoG; fibronectin; p53; retinoblastoma; ***thymosin*** ***beta*** -

L2 ANSWER 51 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT Biology

IT Parts, Structures, & Systems of Organisms

actin filament; heart fibroblast; lamellipodium

IT Chemicals & Biochemicals

actin; cofilin; profilin; ***thymosin*** ***beta*** - ***4***

L2 ANSWER 52 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT Structures, & Systems of Organisms

aortic valve interstitial cell: circulatory system

IT Chemicals & Biochemicals

integrin; matrix metalloproteinase-2; tenascin C; ***thymosin*** -

beta - ***4***

L2 ANSWER 53 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

GEN human CXCR-4 gene (Hominidae): expression; human ***thymosin***

beta - ***4*** gene (Hominidae): expression

L2 ANSWER 54 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT Parts, Structures, & Systems of Organisms

IT skeletal muscle: muscular system

IT Chemicals & Biochemicals

actin; profilin; profilin ternary complex; ***thymosin***

beta - ***4***

L2 ANSWER 55 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT Circulation)

IT Parts, Structures, & Systems of Organisms

chorioallantoic membrane: embryonic structure

IT Chemicals & Biochemicals

parathymosin-alpha; prothymosin-alpha; thymosin-alpha;

thymosin-beta-10; ***thymosin*** - ***beta*** - ***4*** ;

thymosin-beta-9

=> d 12 kwic 300-310

L2 ANSWER 300 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT RAPID ISOLATION OF ***THYMOSIN*** ***BETA*** - ***4*** FROM

HUMAN THYMUS BY RP-HPLC.

L2 ANSWER 301 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

IT OSTEOSARCOMA CELLS IN A REGULATED MANNER.

AB. . . cell lines ROS 17/2.8 and ROS 25/1 was used to identify genes whose

expression is associated with the osteoblast phenotype. ***Thymosin***

. ***beta*** . ***4*** cDNA was cloned from an ROS 17/2.8

complementary DNA library on the basis of its differential hybridization

with radiolabeled cDNA prepared from ROS 17/2.8 and ROS 25/1 cells.

Northern blot analysis confirmed that ***thymosin*** . ***beta***

****, hitherto a putative immunomodulatory hormone, was indeed

differentially expressed. Steady state mRNA levels were severalfold

higher in ROS 17/2.8 cells exhibiting an osteoblast-like phenotype,

compared with the less osteoblast-like ROS 25/1. ***Thymosin***

****. ***4*** transcripts were also detected in rat UMR 106

osteosarcoma cells and in intact neonatal and fetal rat calvaria.

Sequence analysis of the cDNA indicated that ***thymosin***

****. ***4*** transcripts may arise by processing at a more

distal polyadenylation signal. Treatment of ROS 17/2.8 cells with

dexamethasone increased, while addition of 1,25-dihydroxyvitamin D3

decreased ***thymosin*** . ***beta*** . ***4*** mRNA. The

phenotype-dependent expression in the ROS cells and the response to

steroid hormone suggest that ***thymosin*** . ***beta*** . ***4***

expression contributes to the osteoblast phenotype.

L2 ANSWER 302 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AB. . . GnRH agonist treatment. No consistent increases in splenic weight

or bone marrow cell counts were observed. Thymosin alpha-1 but not

thymosin . ***beta*** . ***4*** increased in GnRH

agonist-treated rats. Thymic weight correlated negatively with ovarian

and uterine weights, relative adrenal weight, serum estradiol, LH.

IT Miscellaneous Descriptors

ADRENAL OVARY GONADOTROPIN RELEASING HORMONE DNA ESTRADIOL LUTEINIZING

HORMONE ***THYMOSIN*** ***BETA*** - ***4***

L2 ANSWER 303 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AB. . . bone marrow. Partial DNA sequence analysis suggested that B9 was a

novel sequence not previously identified. C9 was identified as

thymosin . ***beta*** . ***4*** , and C15 showed extensive

homology to lactotransferrin. Thus, screening a bone marrow cDNA library

by differential hybridization has successfully yielded.

L2 ANSWER 310 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB WE HAVE IDENTIFIED A NEW ***THYMOSIN***. ***BETA***. ***4***
 -LIKE PEPTIDE IN PORK SPLEEN. THE NEW PEPTIDE (12 MG) AND
 THYMOSIN. ***BETA***. ***4*** (33 MG) WERE ISOLATED FROM
 230 G OF SPLEEN BY SOLID PHASE EXTRACTION, PREPARATIVE ISOELECTRIC
 FOCUSING, AND HPLC. THE NEW. . . BETA.9 IS THE SUBSTITUTION OF
 LEUCINE BY METHIONINE AT POSITION 6. THIS PEPTIDE REPLACES THYMOSIN
 .BETA.10 WHICH IS THE MINOR ***THYMOSIN***. ***BETA***. ***4***
 -LIKE PEPTIDE IN MOST MAMMALS, E.G., IN MAN, RAT, MOUSE, CAT, AND RABBIT.
 THE STRUCTURE WAS DETERMINED BY AMINO ACID ANALYSIS, TRYPTIC DIGESTION,
 AND CARBOXYPEPTIDASE DIGESTION. PORK SPLEEN CONTAINS 192 .mu.g OF
 THYMOSIN. ***BETA***. ***4*** AND 117 .mu.g OF THYMOSIN
 .BETA.9MET PER GRAM OF TISSUE.

=> d 12 kwic 200-211

L2 ANSWER 200 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. WITH PMA, F-ACTIN INCREASED TO 180% OF CONTROL LEVELS AS MEASURED BY
 RP BINDING AND THE ACTIN SEQUESTERING COMPLEX OF G-ACTIN- ***THYMOSIN***
 BETA. ***4*** DECREASED SIGNIFICANTLY. TO DETERMINE WHETHER
 THE F-ACTIN INCREASED REQUIRED ADHESION, WE INHIBITED CELL ATTACHMENT TO
 THE SUBSTRATUM BY ADDING RGDS. . .

L2 ANSWER 201 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI COMPARISON OF THE INHIBITORY EFFECT OF SERAPENIDE (ACSDXP), TUMOR
 NECROSIS FACTOR ALPHA (INF-ALPHA), ***THYMOSIN***. ***BETA***
 4, TRANSFORMING GROWTH FACTOR BETA-1 (TGF-BETA-1) AND MACROPHAGE
 INFLAMMATORY MOLECULE 1-ALPHA (MIP1-ALPHA) ON CD34+ CELL GROWTH.
 IT MISCELLANEOUS DESCRIPTORS
 ACETYL-N-SERINE-ASPARTIC ACID-LYSINE-PROLINE; BONE MARROW; BOOK
 CHAPTER; HEMATOPOIESIS; MACROPHAGE INFLAMMATORY PROTEIN-1-ALPHA;
 MEETING ABSTRACT; ***THYMOSIN***. ***BETA***. ***4***;
 TRANSFORMING GROWTH FACTOR-BETA-1; TUMOR NECROSIS FACTOR-ALPHA

L2 ANSWER 202 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI EFFECTS OF ***THYMOSIN***. ***BETA***. ***4*** AND THYMOSIN
 BETA-10 ON ACTIN STRUCTURES IN LIVING CELLS.
 AB. . . THE BETA-THYMOSINS ARE A FAMILY OF SMALL PROTEINS ORIGINALLY
 ISOLATED FROM THE THYMUS. RECENTLY, TWO OF THE MAJOR MAMMALIAN ISOFORMS,
 THYMOSIN. ***BETA***. ***4*** (T-BETA-4) AND THYMOSIN
 BETA-10 (T-BETA-10), ARE IDENTIFIED AS SIGNIFICANT ACTIN MONOMER
 SEQUESTERING PROTEINS WHICH MAY BE INVOLVED IN REGULATING ACTIN. . .

L2 ANSWER 203 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI TOTAL SYNTHESIS OF ***THYMOSIN***. ***BETA***. ***4*** BY
 FRAGMENT CONDENSATION.

L2 ANSWER 204 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI CONFORMATION OF ***THYMOSIN***. ***BETA***. ***4*** IN WATER
 DETERMINED BY NMR SPECTROSCOPY.
 AB THE CONFORMATIONAL PREFERENCES OF A 43-AMINO-ACID G-ACTIN-BINDING PEPTIDE,
 THYMOSIN. ***BETA***. ***4***, IN WATER AT 1, 4 AND 14
 DEGREE C, AND AT pH 3.0 AND 6.5 WERE STUDIED BY NMR. NMR SHOWED THAT
 THYMOSIN. ***BETA***. ***4*** LACKS A UNIQUELY FOLDED
 CONFORMATION IN WATER. HOWEVER, SOME PREFERENTIAL ALPHA-HELICAL
 CONFORMATIONS OF ***THYMOSIN***. ***BETA***. ***4*** CAN BE

L2 ANSWER 304 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI MODULATION OF THYMOSIN ALPHA-1 AND ***THYMOSIN***. ***BETA***
 4 LEVELS AND PERIPHERAL BLOOD MONONUCLEAR CELL SUBSETS DURING
 EXPERIMENTAL RHINOVIRUS COLDS.
 AB. . . DAY 3 AND A SIGNIFICANT RISE ON DAY 5 (P < .001). THERE WAS ALSO A
 SIGNIFICANT RISE IN SERUM ***THYMOSIN***. ***BETA***. ***4***
 LEVELS ON DAY 5 (P < .001). SERUM CORTISOL ROSE IN PARALLEL WITH THYMOSIN
 .ALPHA.1 ON DAY 5 AFTER RHINOVIRUS. . .

L2 ANSWER 305 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI RELATIONSHIP OF ***THYMOSIN***. ***BETA***. ***4*** DURING
 PUBERAL DEVELOPMENT IN BOARS AND GILTS IMMUNIZED AGAINST ESTRONE.

L2 ANSWER 306 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. INVESTIGATED. USING AN IN VITRO ANTIGEN (Ag)-SPECIFIC
 MACROPHAGE-DEPENDENT T-CELL PROLIFERATION SYSTEM, WE FOUND THAT BOTH
 THYMOSIN ALPHA 1 (T.ALPHA.1) AND ***THYMOSIN***. ***BETA***
 4 (T.BETA.4) AUGMENT THE Ag-PRESENTING CAPACITY OF MACROPHAGES.
 Macrophage monolayers were pulsed with keyhole limpet hemocyanin (KLH) in
 the absence or. . .

L2 ANSWER 307 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI CHARACTERIZATION AND EXPRESSION IN TISSUES THYMIC CELLS AND LYMPHOCYTES.
 AB A cDNA FOR RAT ***THYMOSIN***. ***BETA***. ***4*** WAS USED TO
 INVESTIGATE THE EXPRESSION OF THIS GENE IN DIFFERENT TISSUES, THYMIC
 CELLS, AND LYMPHOCYTES. HYBRIDIZATION ANALYSIS OF TOTAL. . . ALL THE
 TISSUES SURVEYED, WITH THE HIGHEST LEVELS IN SPLEEN, THYMUS, AND LUNG.
 Examination of thymic cells showed that the ***THYMOSIN***. . .
 BETA. ***4*** GENE IS PREDOMINANTLY EXPRESSED IN THYMOCYTES.
 The ***THYMOSIN***. . . ***BETA***. ***4*** mRNA WAS ALSO STUDIED
 IN Ig+ AND Ig- LYMPHOCYTES, BEING FOURFOLD MORE ABUNDANT IN Ig- THAN Ig+
 SPLENIC LYMPHOCYTES, WHEREAS. . . TYPES OF BLOOD CELLS. THE ANALYSIS
 OF RNA FROM T CELLS AT DIFFERENT MATURATION STAGES EVIDENCED SLIGHT
 DIFFERENCES IN THEIR ***THYMOSIN***. . . ***BETA***. ***4*** mRNA
 CONTENT, INDICATING THAT ***THYMOSIN***. . . ***BETA***. ***4***
 GENE EXPRESSION IS NOT CLEARLY RELATED TO THE DIFFERENTIATION PROCESS OF T
 CELLS. ALL THESE RESULTS DO NOT SUPPORT THE ROLES FOR ***THYMOSIN***
 . . . ***BETA***. ***4*** IN CELLULAR IMMUNITY AND DIFFERENTIATION OF
 LYMPHOID CELLS, SUGGESTING A MORE GENERAL FUNCTION FOR THIS PEPTIDE.
 Preliminary characterization of the. . .

L2 ANSWER 308 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 TI SYNTHESIS OF A ***THYMOSIN***. ***BETA***. ***4*** -LIKE PEPTIDE
 DEACETYL-THYMOSIN BETA-4X-E-N AND ITS RESTORATIVE EFFECT ON DEPRESSED
 LYMPHOCTE BLASTOGENIC RESPONSE TO PHYTOHEMAGGLUTININ PHA IN UREMIC
 PATIENTS.

L2 ANSWER 309 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . A PEPTIDE DERIVATIVE OF THYMIC TISSUE, USING A WELL-CHARACTERIZED
 ANTISERUM. FOR CELL IDENTIFICATION, SERIAL SECTIONS WERE STAINED WITH
 ANTISERA TO ***THYMOSIN***. ***BETA***. ***4*** (T.BETA.4),
 ANOTHER THYMIC PEPTIDE THAT IDENTIFIED OLIGODENDROCYTES, AND WITH
 ANTI-GLIAL FIBRILLARY ACIDIC PROTEIN (GFAP) ANTISERUM THAT STAINS
 ASTROCYTES IN A DOUBLE-STAINING. . .

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observed in aqueous solutions. The segment at residues 5 - 16 showed
characteristic interactions for conformations in both. . .

L2 ANSWER 205 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI G-Actin and ***thymosin*** **beta*** - ***4*** in chick embryo
fibroblasts.

L2 ANSWER 206 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI A novel role for ***thymosin*** **beta*** - ***4*** : A matrigel
induced gene involved in endothelial cell differentiation.

L2 ANSWER 207 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI How profilin promotes actin filament assembly in the presence of
***thymosin*** **beta*** - ***4*** .

L2 ANSWER 208 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***thymosin*** **beta*** **beta*** : A new inhibitory molecule
for human hematopoietic progenitors.

L2 ANSWER 209 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI How Profilin Promotes Actin Filament Assembly in the Presence of
***thymosin*** **beta*** - ***4*** .
AB. . . made possible by the involvement of the irreversible ATP hydrolysis
accompanying actin polymerization. As a consequence, in the presence of
***thymosin*** **beta*** - ***4*** (T-beta-4), low amounts of
profilin promote extensive actin assembly off of the pool of
actin-T-beta-4 complex. When barbed ends are. . .

L2 ANSWER 210 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
AB. . . both proteins were present in elongating parallel fibers in the
upper portion of the molecular layer. Later in cerebellar development,
***thymosin*** **beta*** - ***4*** , but not thymosin beta-10,
was
expressed in Golgi epithelial cells and Bergmann processes.
***thymosin*** **beta*** - ***4*** was expressed in a small
population of cells with microglial morphology scattered throughout the
gray and white matter. Thymosin beta-10 was detected in an even smaller
population of glia. Expression of ***thymosin*** **beta*** -
***4*** and thymosin beta-10 in premigratory granule cells and in
growing neuronal processes is consistent with the possibility that both
beta-thymosins. . .

L2 ANSWER 211 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI ***thymosin*** - ***beta*** - ***4*** (T-beta-4) in activated
platelets.

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SEA THYMOSIN (W) BETA

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L1
L2 FILE 'BIOSIS' ENTERED AT 14:45:03 ON 12 MAY 2004
L2 381 S THYMOSIN (W) BETA (W) 4
=> s l2 and inhibit
137354 INHIBIT

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L3 24 L2 AND INHIBIT

=> d 13 kwic 1-24

L3 ANSWER 1 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . gene expression as a predominant transcript in gut IEL, encodes both
 a ubiquitous actin-binding protein (UTbeta4) with demonstrated capacity to
 inhibit neutrophilic infiltration, and a splice-variant limited to
 lymphoid tissue (UTbeta4) with unknown bioactivity. Freshly isolated
 Vgamma5+ DETCs expressed both forms.

IT . . . effects; 2, 4-dinitrofluorobenzene: allergic contact dermatitis
 inducer, skin irritant, thymosin-beta-4 gene splice variant effects;
 lamda-carrageenan: footpad inflammation inducer, footpad injection,
 thymosin - *beta* - *4* gene splice variant effects
 mouse *thymosin* - *beta* - *4* gene (Muridae):
 LT-beta-4 lymphoid tissue splice variant encoding, UT-beta-4 actin binding
 protein encoding, antiinflammatory effects, skin expression, splice
 variants

L3 ANSWER 2 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . AcSDKP decreased. mMEC-CM (mw 3-10 kD) had no effect on the
 formation of CFU-GM. However, mMEC-CM (mw <3 kD) could *inhibit*
 the growth of CFU-GM. Tbeta4 (10-11approx10-7mol/L) and AcSDKP
 (10-11approx10-5mol/L) had dose-dependent inhibitory effects on the growth
 of CFU-GM. Angiotensin converting. . .

IT . . . lymphatics, immune system; hematopoietic stem cell: blood and
 lymphatics

IT Chemicals & Biochemicals
 AcSDKP: secretion; angiotensin converting enzyme; protease inhibitors;
 thymosin - *beta* - *4* ; secretion

L3 ANSWER 3 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . binding cleft. Alternatively, if, as previously postulated,
 latrunculin A binds in the nucleotide cleft of actin, then its ability to
 inhibit binding by thymosin beta4 is a surprising result that
 suggests that significant allosteric changes affect the thymosin beta4
 binding site..

IT . . . and Molecular Biophysics; Muscular System (Movement and Support)

IT Chemicals & Biochemicals
 actin; actin-binding proteins; latrunculin A: function, structure;
 profilin; *thymosin* - *beta* - *4*

L3 ANSWER 4 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . dynamics ("breathing") of actin monomers. The conformational change
 may reflect the unique ability of Tbeta4 to sequester actin monomers and
 inhibit nucleotide exchange.

IT Major Concepts
 Biochemistry and Molecular Biophysics

IT Chemicals & Biochemicals
 actin: conformation, dynamics, monomers; calcium ATP-actin; magnesium
 ATP-actin; nucleotide: exchange; *thymosin* - *beta* - *4*

L3 ANSWER 5 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN

TI *Thymosin* - *beta* - *4* sulfoxide is an
 anti-inflammatory agent generated by monocytes in the presence of
 glucocorticoids.

AB. . . show that thymosin beta4 sulfoxide is generated by monocytes in the
 presence of glucocorticoids and acts as a signal to *inhibit* an
 inflammatory response. In vitro, thymosin beta4 sulfoxide inhibited
 neutrophil chemotaxis, and in vivo, the oxidized peptide, but not the.

IT . . . monocytes: blood and lymphatics, immune system; neutrophil: blood and
 lymphatics, immune system

IT Chemicals & Biochemicals
 G-actin: glucocorticoids; methionine: oxidation; *thymosin* -
 beta - *4* sulfoxide: generation

L3 ANSWER 6 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . the transglutaminase reaction, while the third glutamyl residue
 (Gln-39) was derivatized with a low efficiency. Labeled derivatives were
 able to *inhibit* polymerization of G-actin and could be
 cross-linked to G-actin by 1-ethyl-3-(3-(dimethylamino)propyl)carbodiimide

IT . . . Fluorescently labeled thymosin beta4 may serve as a useful. . .

IT Major Concepts
 Enzymology (Biochemistry and Molecular Biophysics); Cell Biology

IT Chemicals & Biochemicals
 G-actin; dansylcadaverine: fluorescent label; *thymosin* -
 beta - *4* ; cellular events, glutamyl substrate;
 transglutaminase

L3 ANSWER 7 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . of approximately 0.5 mM. The resulting profilin II-peptide complex
 overcomes the combined capacity of thymosin beta4 and profilin II to
 inhibit actin nucleation and restores the extent of filament
 formation. We do not observe such an effect when barbed filament ends.

IT . . . Parts, Structures, & Systems of Organisms

IT Chemicals & Biochemicals
 actin: nucleation; polyproline; profilin II: dimerization;
 thymosin - *beta* - *4* ; vasodilator stimulated
 phosphoprotein (VASP)

L3 ANSWER 8 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . sequences of the scallop and sea urchin beta-thymosins are 80%
 identical to each other, 75% identical to residues 1-40 of
 thymosin - *beta* - *4* , and 72-80% identical to
 residues 1-40 of other vertebrate beta-thymosins. The sea urchin peptide
 was found to *inhibit* actin polymerization and nucleotide
 exchange. The affinity of the sea urchin peptide for rabbit muscle actin
 is apparently lower than that of *thymosin* - *beta* - *4* .

IT . . . , since about twice the concentration of sea urchin peptide is
 required to give inhibition of actin polymerization or nucleotide exchange
 equivalent to *thymosin* - *beta* - *4* .

L3 ANSWER 9 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN
 AB. . . cells. We have therefore reexamined this issue using highly
 specific reagents known to sequester actin monomers. Two of these

reagents, *thymosin* *beta* - *4* and DNase I, potentially inhibited the sequestration of transferrin receptors into coated pits as measured in a cell-free system using perforated A431 cells. At low concentrations, *thymosin* *beta* - *4* but not DNase I was stimulatory. Importantly, the effects of both reagents were specifically neutralized by the addition of actin. . . . where latrunculin A, a drug that sequesters actin monomers, inhibited receptor-mediated endocytosis. Biochemical and morphological analyses suggest that these reagents *inhibit* later events in coated vesicle budding. These results provide new evidence that the actin cytoskeleton is required for receptor-mediated endocytosis. . . .

L3 AB. ANSWER 10 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* *beta* - *4* binds actin in an extended conformation and contacts both the barbed and pointed ends.

. . . in vivo to maintain a reservoir of unpolymerized actin monomers. In vitro, beta-thymosins form 1:1 complexes with actin monomers and *inhibit* both polymerization and exchange of the bound nucleotide. Circular dichroism data indicate that free *thymosin* *beta* - *4* are not in tight contact with actin. Contacts between specific residues in actin and *thymosin* *beta* - *4* were identified by zero-length cross-linking followed by isolation and sequencing of cross-linked peptides. After carbodiimide-mediated cross-linking, Lys-3 of *thymosin* *beta* - *4* was cross-linked to Glu-167 of actin, and Lys-18 of *thymosin* *beta* - *4* was cross-linked to one of the N-terminal acidic residues of actin (Asp-1 - Glu-4); the cross-linked actin residues lie within subdomains 3 and 1, respectively. These two contacts flank the alpha-helical region of end; *thymosin* *beta* - *4* and place it on the barbed polymerization sterically. After transglutaminase-mediated cross-linking, Lys-38 of *thymosin* *beta* - *4* was cross-linked to Glu-41 of actin, placing the C-terminal region of *thymosin* *beta* - *4* in contact with subdomain 2 on the pointed end; polymerization at the pointed end as well as the barbed end of the monomer. The distance between the pointed-end and barbed-end contacts requires that the C-terminal half of *thymosin* *beta* - *4* be in a predominantly extended conformation.

IT Miscellaneous Descriptors
ACTIN; ACTIN BINDING PROTEIN; BARBED END; BIOCHEMISTRY AND BIOPHYSICS;
CARBOXY-TERMINAL REGION; CONFORMATION; POINTED END; POLYMERIZATION;
THREE-DIMENSIONAL STRUCTURE; *THYMOSIN* *BETA* - *4*
4

L3 AB. ANSWER 11 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Identification of contact sites in the actin- *thymosin* *beta* - *4* complex by distance-dependent thiol cross-linking.

. . . Cys-374, or to the sulfur atom of the ATP analog adenosine 5'-O-(thiotriphosphate) (ATP-gamma-S), the actin derivatives were reacted with synthetic *thymosin* *beta* - *4* analogs containing a cysteine at one of the positions 6, 17, 28, 34, and 40.

Immediate crosslinking as followed by UV spectroscopy was found for Cys-374 of actin and Cys-6 of *thymosin* *beta* - *4* , indicating that the N terminus of *thymosin* *beta* - *4* is in close proximity (ltoeq 9.2 ANG) to the C terminus of actin. In contrast, only insignificant reactivity was measured for all *thymosin* *beta* - *4* analogs when the cross-linkers were anchored at Cys-10 of actin. A second contact site was identified by cross-linking of Cys-17 and Cys-28 in *thymosin* *beta* - *4* , indicating that the hexamotif of *thymosin* *beta* - *4* (positions 17-22) is in close proximity (ltoeq 9.2 ANG) to the nucleotide. The importance of the amino acids 17 and 28 in *thymosin* *beta* - *4* for the interaction with actin was emphasized by the finding that thymosin analogs containing cysteine in these positions exhibited strongly reduced abilities to *inhibit* actin polymerization.

L3 AB. ANSWER 12 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI . . . sufficient to induce actin polymerization. On the other hand, addition of profilin hardly affected the polymerization induced by GTP-gamma-S, while *thymosin* *beta* - *4* or DNase I decreased this polymerization. These data suggested that GTP-gamma-S induced polymerization by increasing the availability of barbed ends. In the presence of cytochalasin B, profilin did *inhibit* polymerization induced by GTP-gamma-S, demonstrating that GTP-gamma-S did not *inhibit* profilin's monomer sequestering ability. The P-actin induced by GTP-gamma-S was not limited by a time-dependent loss of G-actin or G-proteins. . . .

L3 AB. ANSWER 13 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Increasing intracellular concentrations of *thymosin* *beta* - *4* in PtK2 cells: Effects on stress fibers, cytokinesis, and cell spreading. *Thymosin* *beta* - *4* (T-beta-4) binds to G-actin in vitro and inhibits actin polymerization. We studied the effects of increasing T β concentration within living PtK2 cells, comparing its effects on the disassembly of stress fibers and membrane-associated actin with its ability to *inhibit* cytokinesis and cell spreading after mitosis. We chose PtK2 cells for the study because these cells have many striking actin. . . within 10 min, while membrane actin appeared only somewhat reduced. If the PtK2 cells were mitotic, similar microinjection of pure *thymosin* *beta* - *4* protein at times from early prophase to metaphase resulted in an unusual pattern of delayed cytokinesis. Furrowing occurred but at. . .

L3 AB. ANSWER 14 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Interaction of beta-thymosins, *thymosin* *beta* - *4* -sulfoxide, and N-terminally truncated *thymosin* *beta* - *4* with actin studied by equilibrium centrifugation, chemical cross-linking and viscometry.

All beta-thymosins studied interact with G-actin in a bimolecular complex and *inhibit* the polymerization to F-actin under high salt conditions. The interactions between actin and beta-thymosins have been studied under polymerization conditions. . . actin we employed equilibrium centrifugation of unlabeled G-actin, viscometry, and chemical cross-linking to investigate the interactions with several beta-thymosins, oxidized *thymosin* *beta* - *4* and N-terminally truncated beta-4. The apparent dissociation constants for actin from

bovine heart and beta-thymosins were 2.5, 0.1, and 2.7 μM for *thymosin* *beta* - *4* , (Ala)beta-4(beta-4-Ala), and beta-1 respectively. Comparable apparent dissociation constants were obtained for the interaction of G-actin from rabbit skeletal muscle and *thymosin* *beta* - *4* or beta-4-Ala. In rabbits *thymosin* *beta* - *4* -Ala replaces beta-4 being different in amino acid residue 1 only. The apparent dissociation constant of thymosin beta-10 with actin from rabbit skeletal muscle, however, is about 10% of the value obtained with actin from bovine heart. Oxidation of *thymosin* *beta* - *4* at Met6 (beta-4-sulfoxide) as well as truncation of 6 (beta-4(7-43)) or 12 (beta-4(13-43)) amino acid residues from the N-terminus increase. 13 and 24 are necessary for 1-ethyl-3(3-(dimethyl-aminopropyl)-carbodiimide cross-linking of G-actin. In spite of comparable apparent dissociation constants between actin and *thymosin* *beta* - *4* -sulfoxide or beta-4(7-43) or beta-4(13-43), only beta-4-sulfoxide and not the truncated beta-thymosins inhibits actin polymerization, however, only at a 20-fold higher concentration than beta-4. Thus the first six amino acid residues are indispensable to *inhibit* salt-induced actin polymerization as analyzed by viscometry. While the apparent dissociation constant of the actin/*thymosin* *beta* - *4* complex generated from a preformed actin/DNase-I complex is 160 μM , a fivefold excess of DNase I over the preformed actin/*thymosin* *beta* - *4* complex is necessary to observe a comparable dissociation constant.

L3 ANSWER 15 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Interaction of G-actin with *thymosin* *beta* - *4*
AB and its variants thymosin beta-9 and thymosin beta-9-met.

Thymosin *beta* - *4* is a major actin sequestering peptide in vertebrate cells and plays a role in the regulation of actin monomer/polymer ratio. Thymosin beta-9 and thymosin beta-9-met are minor variants of *thymosin* *beta* - *4* . The possible function of these peptides has been investigated by comparing the actin binding properties of these beta-thymosins. Thymosin beta-9 and thymosin beta-9-met were found to *inhibit* polymerization of ATP-actin with identical K_D s of 0.7-0.8 μM (as compared to 2 +/- 0.3 μM for *thymosin* *beta* - *4* , they bound to ADP-G-actin with a 100-fold lower affinity than to ATP-G-actin. The interaction of *thymosin* *beta* - *4* and thymosin methionine-6 into methionine sulfoxide. Binding of *thymosin* *beta* - *4* to G-actin was accompanied by a 15% increase in the fluorescence intensity of actin tryptophans, and a 10 nm emission. blue shift. Methionine-6 played an important role in this effect. The fluorescence change was used to monitor the kinetics of *thymosin* *beta* - *4* binding to G-actin in the stopped flow. The reaction was bimolecular, with association and dissociation rate constants of approx 1.5 $\mu\text{M}^{-1}\text{s}^{-1}$. . . respectively, under physiological conditions. The possible physiological significances of methionine-6 oxidation and of the relatively slow binding kinetics in regulating *thymosin* *beta* - *4* function in vivo is discussed.

L3 ANSWER 16 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* - *beta* - *4* (T-beta-4) in activated platelets.

AB. . . 5 seconds after stimulation, nucleation sites for pyrene actin polymerization increase 1.5 times in Triton-lysed supernatants. Cytochalasin D, known to *inhibit* the increase in F-actin after thrombin, also inhibits the fall in T-beta-4-actin complex and the increase in nucleation sites. Phosphorylation. . .

L3 ANSWER 17 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI *Thymosin* *beta* - *4* synergizes with human granulocyte-macrophage colony-stimulating factor in maintaining bone marrow proliferation.

AB Recent evidence supports a role for *thymosin* *beta* - *4* (T-beta-4) in the inhibition of murine hematopoietic stem cell proliferation. This supposition results from studies in which the N-terminal tetrapeptide. . . on proliferating and unstimulated enriched human bone marrow. In short-term liquid cultures studied sequentially over 1-7 days, T-beta-4 failed to *inhibit* cell proliferation, but maintained the proliferative effect of granulocyte-macrophage colony stimulating factor (GM-CSF) on days following maximum stimulation (days 5-7) . . .

L3 ANSWER 18 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Transcript levels of *thymosin* *beta* - *4* , an actin-sequestering peptide, in cell proliferation.
AB *Thymosin* *beta* - *4* (beta-4) is an ubiquitous 5-kDa peptide that has been identified as an actin-sequestering peptide. In this work, Northern blot analysis. . . S-phase. The increase in beta-4 mRNA observed in the G2/M boundary of the cell cycle, together with its ability to *inhibit* actin polymerization, suggests a possible role of beta-4 in the morphological changes and actin redistribution occurring during the cytokinesis.

L3 ANSWER 19 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI Actin-sequestering ability of *thymosin* *beta* - *4* fragments, and *thymosin* *beta* - *4* -like peptides as assessed by the DNase I inhibition assay.

AB *Thymosin* *beta* - *4* containing 43 amino-acid residues belongs to a family of highly homologous peptides present at high concentrations in various species, cells, and tissues. Sarer et al. (J. Biol. Chem. 266, 40-29-4032 (1991)) have shown that *thymosin* *beta* - *4* is an actin-sequestering peptide. Because DNasease I is inhibited by G-actin and not by F-actin we employed this enzymatic assay to determine the actin sequestering properties of 4 other *thymosin* *beta* - *4* -like peptides and fragments of digestions. *Thymosin* *beta* - *4* sequesters G-actin at a 1 to 1 ratio as thereby inhibits its polymerisation to F-actin in high salt solution. The oxidation of the single methionine residue at position 6 does not abolish its actin-sequestering properties. However neither *thymosin* *beta* - *4* -24-43 nor *thymosin* *beta* - *4* -13-43 *inhibit* the polymerization of G-actin. We conclude from this that some structural features in the amino-acid sequence of *thymosin* *beta* - *4* before position 13 are obligatory for its biological function. Oxidized *thymosin* *beta* - *4* (beta-4-sulfoxide) as well as four other *thymosin* *beta* - *4* -like peptides were shown to be actin-sequestering peptides like

Consequently, actinomycin D did not inhibit thymosin*
 beta . *4* induction in contrast to cycloheximide. The
 peaks of maximal thymosin* . *beta* . *4* levels and
 biosynthesis were followed by rapid decreases of these parameters
 suggesting a function of thymosin* . *beta* . *4* in
 the early phase of T cell activation.

L3 ANSWER 24 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 TI CHEMICAL CHARACTERIZATION OF THYMOSIN* *BETA* - *4*
 AB. . . part of ongoing investigations on the endocrine thymus, a
 hormone-like peptide was isolated and purified to homogeneity which was
 termed thymosin* . *beta* . *4* . Thymosin*
 . *beta* . *4* has MW = 4982 and an isoelectric point of 5.1.
 The complete amino acid sequence of this polypeptide was established by
 automated Edman degradation and by manual sequence analysis.
 Thymosin* . *beta* . *4* is composed of 43 amino acid
 residues with acetylserine at the NH2 terminus. This molecule induces
 expression of terminal deoxynucleotidyl transferase in
 transferase-negative murine thymocytes in vivo and in vitro. It also
 exhibits ability to inhibit the migration of macrophages.
 Comparison of the sequence of thymosin* . *beta* . *4*
 to other thymic hormones or other published protein sequences does not
 reveal any statistically significant relationship. Two helical regions
 were identified in the structure using data for prediction of protein
 conformation. Thymosin* . *beta* . *4* is one of
 the biologically active peptides present in thymosin fractions 5 and 5A
 which participate in the regulation, differentiation. . .

=> d 12 bib ab 5

L2 ANSWER 5 OF 381 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 AN 2004:130775 BIOSIS
 DN PREV200400116257
 TI Thymosin beta4 increases hair growth by activation of hair follicle stem
 cells.
 AU Philp, Deborah; Nguyen, Mychi; Scheremeta, Brooke; St-Surin, Sharleen;
 Villa, Ana M.; Orgei, Adam; Kleinman, Hynda K. [Reprint Author]; Elkin,
 Michael
 CS Cell Biology Section, NIDCR, NIH, 30 Convent Dr., Bldg. 30, Room 433, MSC
 4370, Bethesda, MD, 20892, USA
 hkleinman@nider.nih.gov
 SO FASEB Journal, (February 2004) Vol. 18, No. 2, pp. 385-387. print.
 ISSN: 0892-6638 (ISSN print).
 DT Article
 LA English
 ED Entered STN: 3 Mar 2004
 Last Updated on STN: 3 Mar 2004

=> d 13 bib ab 5, 9, 10, 17, 19

L3 ANSWER 5 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 AN 2000:104616 BIOSIS
 DN PREV200000104616
 TI Thymosin* . *beta* . *4* sulfoxide is an

thymosin . *beta* . *4* .
 ANSWER 20 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 TI G- to F-actin modulation by a single amino acid substitution in the actin
 binding site of actobindin and thymosin* . *beta* . *4*
 AB The actin binding sites of actobindin and thymosin* . *beta* .
 . *4* , two small polypeptides that inhibit actin
 polymerization by interacting with monomeric actin, have been localized
 using peptide mimetics. Both sites are functionally similar and extend.

L3 ANSWER 21 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 TI REGULATOR OF ACTIN POLYMERIZATION IN LIVING CELLS.
 AB Thymosin* . *beta* . *4* . (beta.4) is a 5-kDa
 polypeptide originally identified in calf thymus. Although numerous
 activities have been attributed to beta.4, its physiological role remains
 elusive. Recently, beta.4 was found to bind actin in human platelet
 extracts and to inhibit actin polymerization in vitro, raising
 the possibility that it may be a physiological regulator of actin
 assembly. To examine this. . .

L3 ANSWER 22 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 AB. . . the initial FSH injection. Twenty-eight of the heifers received
 Norgestomet implants 12 h prior to the initial PGF2.alpha. injection to
 inhibit the LH surge. Blood sample were collected from animals at
 12-h intervals until the PGF2.alpha. injection and every 6 h thereafter
 until 108 h post PGF2.alpha. treatment. Although thymosin*
 . *beta* . *4* concentrations did change over the estrual
 period, no differences were noted between control and superovulatory
 animals in the initial experiment even though estradiol concentrations
 were increased tenfold from the FSH stimulated ovary. In the second
 experiment, thymosin* . *beta* . *4* and .alpha.1
 increased as the estrual period progressed and decreased (p < 0.05)
 subsequent to the LH surge. Animals not exhibiting an LH surge during the
 estrual period had decreased thymosin .alpha.1 concentrations. Animals
 receiving Norgestomet implants had decreased thymosin*
 . *beta* . *4* concentrations (p < 0.05). Evidence supports
 progesterone having a regulatory effect on thymosin* .
 . *beta* . *4* concentration but no effect on thymosin .alpha.1.
 Ovulatory increases in estradiol seem to have little influence on either
 thymosin. Thymosin. . .

L3 ANSWER 23 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
 TI RAPID INDUCTION OF THYMOSIN* . *BETA* - *4* IN
 CONCANAVALIN A-STIMULATED THYMOCYTES BY TRANSLATIONAL CONTROL.
 AB The expression of thymosin* . *beta* . *4* , an
 ubiquitous peptide of high cellular content, was studied in concanavalin
 A-stimulated rat thymocytes within the first 3 h after. . . occurred
 after 1 h of stimulation amounting to 0.4% of the total cellular protein.
 This increase coincided with that of thymosin* . *beta* .
 . *4* biosynthesis measured by [35S]methionine incorporation. The
 share of thymosin* . *beta* . *4* synthesis in total
 protein synthesis 1 h after addition of concanavalin A amounts to 1% but
 no elevation of the. . . observed. These data suggest that a
 translational control mechanism is involved in this rapid induction.

anti-inflammatory agent generated by monocytes in the presence of glucocorticoids.

Young, J. D.; Lawrence, A. J. (Reprint author); MacLean, A. G.; Leung, B. P.; McInnes, I. B.; Canas, B.; Pappin, D.J.C.; Stevenson, R. D. Life Sciences, University of Glasgow, Glasgow, G12 8QQ, UK

SO Nature Medicine, (Dec., 1999) Vol. 5, No. 12, pp. 1424-1427. print. ISSN: 1078-8956.

DT Article

LA English

ED Entered STN: 22 Mar 2000

AB The possibility that glucocorticoids upregulate the expression of anti-inflammatory mediators is an exciting prospect for therapy in inflammatory diseases, because these molecules could give the therapeutic benefits of steroids without toxic side effects. Supernatants from monocytes and macrophages cultured in the presence of glucocorticoids increase the dispersion of neutrophils from a cell pellet in the capillary tube migration assay. This supernatant factor, unlike other neutrophil agonists, promotes dispersive locomotion of neutrophils at uniform concentration, lowers their adhesion to endothelial cells, inhibits chemotactic response to fMLP and induces distinctive morphological changes. Here we show that thymosin beta4 sulfoxide is generated by monocytes in the presence of glucocorticoids and acts as a signal to inhibit an inflammatory response. In vitro, thymosin beta4 sulfoxide inhibited neutrophil chemotaxis, and in vivo, the oxidized peptide, but not the native form, was a potent inhibitor of carrageenin-induced edema in the mouse paw. Thymosin beta4 is unique, because oxidation attenuates its intracellular G-actin sequestering activity, but greatly enhances its extracellular signaling properties. This description of methionine oxidation conferring extracellular function on a cytosolic protein may have far-reaching implications for future strategies of anti-inflammatory therapy.

L3 ANSWER 9 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1997:411888 BIOSIS

DN PREV199799703931

TI The actin cytoskeleton is required for receptor-mediated endocytosis in mammalian cells.

AU Lamaze, Christophe; Fujimoto, L. Miya; Yin, Helen L.; Schmid, Sandra L. (Reprint author)

CS Dep. Cell Biol., Scripps Res. Inst., La Jolla, CA 92037, USA

SO Journal of Biological Chemistry, (1997) Vol. 272, No. 33, pp. 20332-20335. CODEN: JBCHA3. ISSN: 0021-9258.

DT Article

LA English

ED Entered STN: 24 Sep 1997

AB Actin filament organization is essential for endocytosis in yeast. In contrast, the actin-depolymerizing agent cytochalasin D has yielded ambiguous results as to a role for actin in receptor-mediated endocytosis in mammalian cells. We have therefore reexamined this issue using highly specific reagents known to sequester actin monomers. Two of these reagents, thymosin* beta* - *4* and DNase I, potentially inhibited the sequestration of transferrin receptors into coated pits as measured in a cell-free system using perforated A431 cells. At low concentrations, thymosin* beta* - *4* but not

DNase I was stimulatory. Importantly, the effects of both reagents were specifically neutralized by the addition of actin monomers. A role for the actin cytoskeleton was also detected in intact cells where latrunculin A, a drug that sequesters actin monomers, inhibited receptor-mediated endocytosis. Biochemical and morphological analyses suggest that these reagents inhibit later events in coated vesicle budding. These results provide new evidence that the actin cytoskeleton is required for receptor-mediated endocytosis in mammalian cells.

L3 ANSWER 10 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1997:268740 BIOSIS

DN PREV199799560458

TI Thymosin* beta* - *4* binds actin in an extended conformation and contacts both the barbed and pointed ends.

AU Safer, Daniel (Reprint author); Sosnick, Robin R.; Elzinga, Marshall

CS Dep. Cell Developmental Biol., Univ. Pennsylvania, Philadelphia, PA 19104-6058, USA

SO Biochemistry, (1997) Vol. 36, No. 19, pp. 5806-5816. CODEN: BICHAW. ISSN: 0006-2960.

DT Article

LA English

ED Entered STN: 24 Jun 1997

AB The beta-thymosins are a family of highly polar peptides which serve in vivo to maintain a reservoir of unpolymerized actin monomers. In vitro, beta-thymosins form 1:1 complexes with actin monomers and inhibit both polymerization and exchange of the bound nucleotide. Circular dichroism data indicate that free thymosin* beta* - *4* is predominantly unstructured, containing at most six residues of alpha-helix, and that up to six additional residues may adopt an alpha-helical conformation upon binding actin. NMR data indicate that many parts of thymosin* beta* - *4* are not in tight contact with actin. Contacts between specific residues in actin and thymosin* beta* - *4* were identified by zero-length cross-linking followed by isolation and sequencing of cross-linked peptides. After carbodiimide-mediated cross-linking, Lys-3 of thymosin* beta* - *4* was cross-linked to Glu-167 of actin, and Lys-18 of thymosin* beta* - *4* was cross-linked to Glu-167 of actin, and Lys-18 of thymosin* beta* - *4* was cross-linked to one of the N-terminal acidic residues of actin (Asp-1 - Glu-4); the cross-linked actin residues lie within subdomains 3 and 1, respectively. These two contacts flank the alpha-helical region of thymosin* beta* - *4* and place it on the barbed end; thymosin* beta* - *4* can thus block actin polymerization sterically. After transglutaminase-mediated cross-linking, Lys-38 of thymosin* beta* - *4* was cross-linked to Glu-41 of actin, placing the C-terminal region of thymosin* beta* - *4* in contact with subdomain 2 on the pointed end; thymosin* beta* - *4* may sterically block actin polymerization at the pointed end as well as the barbed end of the monomer. The distance between the pointed-end and barbed-end contacts requires that the C-terminal half of thymosin* beta* - *4* be in a predominantly extended conformation.

L3 ANSWER 17 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

AN 1993:450748 BIOSIS

DN PREV199396095648

TI Thymosin* beta* - *4* synergizes with human

granulocyte-macrophage colony-stimulating factor in maintaining bone marrow proliferation.

AU Meszinski, Lynn C. [Reprint author]; Naylor, Paul H.; Oliver, Janelle; Goldstein, Allen L.

CS Dep Pathol., H. Lee Moffitt Cancer Cent., P.O. Box 280179, Tampa, FL 33622, USA

SO Immunopharmacology, (1993) Vol. 26, No. 1, pp. 83-92.

DT CODEN: IMMUPP. ISSN: 0162-3109.

LA English

ED Entered STN: 5 Oct 1993

AB Recent evidence supports a role for *thymosin* *beta* - *4* (T-beta-4) in the inhibition of murine hematopoietic stem cell proliferation. This suppression results from studies in which the N-terminal tetrapeptide derived from native T-beta-4 was administered to mice and appeared to prevent CFU-S recruitment into DNA synthesis. The importance of this observation was the concomitant ability of the tetrapeptide to prevent cytosine arabinoside (ara-C) toxicity in mice given LD-50 doses of this drug. In the present study, we have extended these observations by demonstrating that whole synthetic T-beta-4 is more effective than the N-terminal tetrapeptide in protecting mice from the toxicity of ara-C. This observation supports the hypothesis that T-beta-4 is the biologically important parent molecule for this activity. To determine if inhibition of cell cycle progression also occurs in committed human bone marrow progenitors treated with T-beta-4, we have investigated the effects of synthetic T-beta-4 on proliferating and unstimulated enriched human bone marrow. In short-term liquid cultures studied sequentially over 1-7 days, T-beta-4 failed to *inhibit* cell proliferation, but maintained the proliferative effect of granulocyte-macrophage colony stimulating factor (GM-CSF) on days following maximum stimulation (days 5-7). No effect was noted before the fifth day in culture, no did T-beta-4 exert any demonstrable effect in the absence of added GM-CSF. Any observable effect of T-beta-4 required that it be present in the cultures on or before day 3 of GM-CSF stimulation. These results suggest that an additional effect of T-beta-4 is the stimulation of a subpopulation of committed human bone marrow precursor cells to become more sensitive to the growth-promoting activity of GM-CSF, thereby enhancing myelopoiesis. It is of interest that the N-terminal peptide of T-beta-4 is a shared sequence with tumor necrosis factor alpha, which is also known to have a similar stimulatory capacity. We, therefore, postulate that the growth enhancement noted in short-term cultures is mediated by the region containing these shared sequences.

L3 ANSWER 19 OF 24 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. ON STN

AN 1993:248344 BIOSIS

DN PREV199395127519

TI Actin-sequestering ability of *thymosin* *beta* - *4* fragments, and *thymosin* *beta* - *4* -like peptides as assessed by the DNase I inhibition assay.

AU Hannappel, Ewald [Reprint author]; Wartenberg, Friederike

CS Institut Biochemie/Medizinische Fakultät, Univ. Erlangen-Nuernberg, Fahrstr. 17, W-8520 Erlangen, Germany

SO Biological Chemistry Hoppe-Seyler, (1993) Vol. 374, No. 2, pp. 117-122.

DT CODEN: BCHSEI. ISSN: 0177-3593.

Article

LA English

ED Entered STN: 21 May 1993

AB Last Updated on STN: 13 Jul 1993

Thymosin *beta* - *4* containing 43 amino-acid residues belongs to a family of highly homologous peptides present at high concentrations in various species, cells, and tissues. Safer et al. (J. Biol. Chem. 266, 40-29-4032 (1991)) have shown that *thymosin* *beta* - *4* is an actin-sequestering peptide. Because DNase I is inhibited by G-actin and not by F-actin we employed this enzymatic assay to determine the actin sequestering properties of 4 other *thymosin* *beta* - *4* -like peptides and fragments of *thymosin* *beta* - *4* generated by enzymatic digestions. *Thymosin* *beta* - *4* sequesters G-actin at a 1 to 1 ratio as thereby inhibits its polymerisation to F-actin in high salt solution. The oxidation of the single methionine residue at position 6 does not abolish its actin-sequestering properties. However neither *thymosin* *beta* - *4* -24-43 nor *thymosin* *beta* - *4* -13-43 *inhibit* the polymerization of G-actin. We conclude from this that some structural features in the amino-acid sequence of *thymosin* *beta* - *4* before position 13 are obligatory for its biological function. Oxidized *thymosin* *beta* - *4* (beta-4-sulfoxide) as well as four other *thymosin* *beta* - *4* -like peptides were shown to be actin-sequestering peptides like *thymosin* *beta* - *4*.

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24 S L2 AND INHIBIT

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